

J Subst/kute 23. (Four Times Amended) A thin film transistor comprising:
a semiconductor layer having an intrinsic or substantially
intrinsic channel region;
K' a gate insulating layer contacting said semiconductor layer;
and
a gate electrode adjacent to said semiconductor layer with said
gate insulating layer therebetween,
wherein said semiconductor layer comprises a crystalline
silicon semiconductor layer [containing oxygen, nitrogen or carbon at a
concentration 1×10^{19} atoms/cm³ or less and] and wherein said
semiconductor layer shows a Raman shift at a wavenumber of 512 cm⁻¹ or
higher.

J2
Subst/kute 25. (Four Times Amended) A thin film transistor comprising:
a semiconductor layer having an intrinsic or substantially
intrinsic channel region;
K³ a gate insulating layer contacting said semiconductor layer;
and
a gate electrode adjacent to said semiconductor layer with said
gate insulating layer therebetween,
wherein said semiconductor layer comprises a crystalline
silicon semiconductor layer [containing oxygen, nitrogen or carbon at a
concentration 1×10^{19} atoms/cm³ or less and] and wherein a ratio of a full
band width at half maximum (FWHM) of a Raman peak of said
semiconductor layer to a FWHM of a Raman peak of a single crystalline
silicon is less than 3.

J3

27. (Four Times Amended) A thin film transistor comprising:

a semiconductor layer having an intrinsic or substantially intrinsic channel region;

a gate insulating layer contacting said semiconductor layer;

and

a gate electrode adjacent to said semiconductor layer with said gate insulating layer therebetween,

wherein said semiconductor layer comprises a crystalline silicon semiconductor layer [containing oxygen, nitrogen or carbon at a concentration 1×10^{19} atoms/cm³ or less and] and wherein a peak intensity ratio I_a/I_c of said semiconductor layer is less than 0.4 where I_a represents a Raman peak intensity at a wavenumber of 480 cm⁻¹ for an amorphous component of said semiconductor layer and I_c represents a Raman peak intensity at 521 cm⁻¹ for a single crystalline silicon.

Substrate

K5

J4

32. (Five Times Amended) A thin film transistor produced by a process comprising the steps of:

forming on a surface an intrinsic or substantially intrinsic semiconductor film having a region to become a channel region of the transistor, [said semiconductor film containing therein carbon, nitrogen or oxygen at a concentration of 1×10^{19} atoms/cm³ or less,] said semiconductor film comprising a material selected from the group consisting of germanium and a germanium silicon alloy; and

Sub 1

K1

irradiating said entire semiconductor film with a laser beam or a light having a strength equivalent to the laser beam with melting the semiconductor film to increase the degree of crystallinity thereof.

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CONT

33. (Three Times Amended) A thin film transistor comprising:
a semiconductor layer having an intrinsic or substantially
intrinsic channel region;

a gate insulating layer contacting said semiconductor layer;
and

a gate electrode adjacent to said semiconductor layer with said
gate insulating layer therebetween;

wherein said semiconductor layer comprises a non-single
crystalline silicon semiconductor layer [containing oxygen at a concentration
 1×10^{19} atoms/cm³ or less and said semiconductor layer] which shows a
Raman shift at a wavenumber of 512 cm⁻¹ or higher.

34. (Three Times Amended) A thin film transistor comprising:
a semiconductor layer having an intrinsic or substantially
intrinsic channel region;

a gate insulating layer contacting said semiconductor layer;
and

a gate electrode adjacent to said semiconductor layer with said
gate insulating layer therebetween,

wherein said semiconductor layer comprises a non-single
crystalline silicon semiconductor layer [containing oxygen at a concentration
 1×10^{19} atoms/cm³ or less and] and wherein a ratio of a full band width at
half maximum (FWHM) of a Raman peak of said semiconductor layer to
a FWHM of a Raman peak of a single crystalline silicon is less than 3.

35. (Three Times Amended) A thin film transistor comprising:
a semiconductor layer having an intrinsic or substantially
intrinsic channel region;

a gate insulating layer contacting said semiconductor layer;
and

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CONT.*
a gate electrode adjacent to said semiconductor layer with said
gate insulating layer therebetween,

wherein said semiconductor layer comprises a non-single
crystalline silicon semiconductor layer [containing oxygen at a concentration
 1×10^{19} atoms/cm³ or less and] and wherein a peak intensity ratio I_a/I_c of
said semiconductor layer is less than 0.4 where I_a represents a Raman peak
intensity at a wavenumber of 480 cm⁻¹ for an amorphous component of said
semiconductor layer and I_c represents a Raman peak intensity at 521 cm⁻¹
for a single crystalline silicon.

36. (Three Times Amended) A thin film transistor produced by
a process comprising the steps of:

forming on a surface an intrinsic or substantially intrinsic
semiconductor film having a region to become a channel region of the
transistor, [said semiconductor film containing therein carbon at a
concentration of 1×10^{19} atoms/cm³ or less,] said semiconductor film
comprising a material selected from the group consisting of germanium and
a germanium silicon alloy; and

irradiating the semiconductor film with a laser beam or a light
having a strength equivalent to the laser beam to increase the degree of
crystallinity of the semiconductor film.

37. (Three Times Amended) A thin film transistor produced by
a process comprising the steps of:

forming on a surface an intrinsic or substantially intrinsic
semiconductor film having a region to become a channel region of the
transistor, [said semiconductor film containing therein nitrogen at a

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Concl'd

concentration of 1×10^{19} atoms/cm³ or less,] said semiconductor film comprising a material selected from the group consisting of germanium and a germanium silicon alloy; and

irradiating the semiconductor film with a laser beam or a light having a strength equivalent to the laser beam to increase the degree of crystallinity of the semiconductor film.

38. (Three Times Amended) A thin film transistor produced by a process comprising the steps of:

forming on a surface an intrinsic or substantially intrinsic semiconductor film having a region to become a channel region of the transistor [containing therein oxygen [at a concentration of 1×10^{19} atoms/cm³ or less], said semiconductor film comprising a material selected from the group consisting of germanium and a germanium silicon alloy; and

irradiating the semiconductor film with a laser beam or a light having a strength equivalent to the laser beam to increase the degree of crystallinity of the semiconductor film.

[Please add new claims 39-45 as follows:]

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--39. The thin film transistor of claim 23, wherein said crystalline silicon semiconductor layer includes oxygen, nitrogen or carbon at a concentration of 1×10^{19} atoms/cm³ or less.

40. The thin film transistor of claim 25, wherein said crystalline silicon semiconductor layer includes oxygen, nitrogen or carbon at a concentration of 1×10^{19} atoms/cm³ or less.

41. The thin film transistor of claim 27, wherein said crystalline silicon semiconductor layer includes oxygen, nitrogen or carbon at a concentration of 1×10^{19} atoms/cm³ or less.

JS Cont

42. The thin film transistor of claim 32, wherein said semiconductor film includes carbon, nitrogen or oxygen at a concentration of 1×10^{19} atoms/cm³ or less.

43. The thin film transistor of claim 33, wherein said non-single crystalline silicon semiconductor layer includes oxygen at a concentration of 1×10^{19} atoms/cm³ or less.

44. The thin film transistor of claim 34, wherein said non-single crystalline silicon semiconductor layer includes oxygen at a concentration of 1×10^{19} atoms/cm³ or less.

45. The thin film transistor of claim 35, wherein said non-single crystalline silicon semiconductor layer includes oxygen at a concentration of 1×10^{19} atoms/cm³ or less.

46. The thin film transistor of claim 36, wherein said semiconductor film includes carbon at a concentration of 1×10^{19} atoms/cm³ or less.

47. The thin film transistor of claim 37, wherein said semiconductor film includes nitrogen at a concentration of 1×10^{19} atoms/cm³ or less.